Summary and Conclusions

Increased cheese yield and savings in energy, milk clotting enzymes, manufacturing time, and whey disposal have evoked an interest in the use of milk pretreated by ultrafiltration (UF) for cheese making. Ultrafiltrated milk was used successfully in making soft cheeses. The Blue-veined cheese is a semi-hard mould ripened cheese. It is made in Egypt from a mixture of Cows' and buffaloes' milk.

The use of imported milk ingredients in dairy products is growing fastly in the last few years in Egypt due to the limited National milk supply.

Therefore, this study was planned to evaluate the manufacture of Blue-veined cheese from ultrafiltered reconstituted skim milk and butter oil and compare it with the cheese made by traditional process.

To manufacture the UF-Blue cheese, the retentate from reconstituted skim milk (10% T.S.) was mixed with about 14% anhydrous milk fat, homogenized at 65 °C , cooled to 32 °C and 2% Streptococcus lactis was added. At acidity of 0.26%, 0.1g spores of Penicillium roqueforti per kg retentate and rennet were stirred in, followed by 1% Na Cl. After coagulation, it was cut and filled into moulds. The sequence of other steps were as those made in the traditional method. The control (traditional

cheese (TR) was made using fresh mixed cows' and buffaloes' milk (1 : 1). Samples were taken for scoring and analysis after manufacture and then every 15 days for four months.

The results can be summerized as follows:-

1 - The TS content in the retentate was about 2.4 times of the control (fresh milk). The fat / DM was 33.28 and 43.9% in milk and retentate respectively, while protein/ DM was 24.81 and 36.03% in the same order. Acidity percent also was lower in the milk than retentate due to the high protein content in the latter. Lactose /DM in milk represented about three folds of that in the retentate. The nitrogen and calcium distribution were different in milk than retentate.

2 - The analysis of the Blue-cheese showed that the moisture content was higher in UF than TR-Blue cheese and it decreased during ripening in the two types, but it remained higher in the former than the TR-Cheese.

3 - Fat content and total nitrogen contents were higher in the TR-than UF-Blue cheese and they increased gradually during ripening till the end of the ripening period .

4 - Soluble N and N.P.N were higher in the UF-than the TR-Blue cheese at the begining and they increased with the ripening progress.

5 - Lactose content was higher in UF-than TR-Blue cheese due to the high moisture content of the UF-cheese. Lactose content decreased during ripening due to fermentation.

6 - After manufacture, the acidity percent was higher in TR-cheese than UF-cheese, and it increased till two months and it decreased in the two types with the ripening development. The pH took the opposite trend, being lower in the TR than UF-cheese and it increased during ripening and they were the same at the end of the curing process.

7 - The flavour components including TVFA, total carbonyl and monocarbonyl compounds were higher in the UF than TR-Blue cheese and they increased gradually during ripening process in the two types.

8 - The amount of soluble tyrosine and tryptophan took the same trend as well as in all cheeses. They increased with progressive increase in protein breakdown during ripening rapidly at first, then the rate of increase declined.

9 - The electrophoretic pattern showed that the breakdown of protein during ripening was higher in the UF-than TR-Blue cheese.

10 - Quantitative changes in free fatty acids and free amino acids occurred during the ripening were discussed.

11 - Scoring of cheese indicates that cheese made from retentate (UF-Blue cheese) proceeds more rapid ripening than that made by traditional method and it had a smooth, creamy and spreadable body with a sharp and peppery flavour which is desired in this type of cheese.

12 - The correlation coefficient and T test between the score panel test and other determined chemical values were statistically calculated to evaluate the ripening process.